PCN: 4200XXXXX

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER

STATEMENT OF WORK

X-band slotted waveguide flat plate antenna

1 Background

Goddard Space Flight Center is looking X-band slotted waveguide flat plate antennas for the AITT funded project ER-2 X-band Radar (EXRAD). EXRAD utilizes a high peak power TWT based transmitter and operates with two radar beams – nadir and conical scanning. The flat plate antenna should be capable of handling the high transmit power at high-altitude environment (70,000 ft) and meeting the size, weight and electrical performance requirements.

2 Period of Performance

Delivery of the completed hardware.

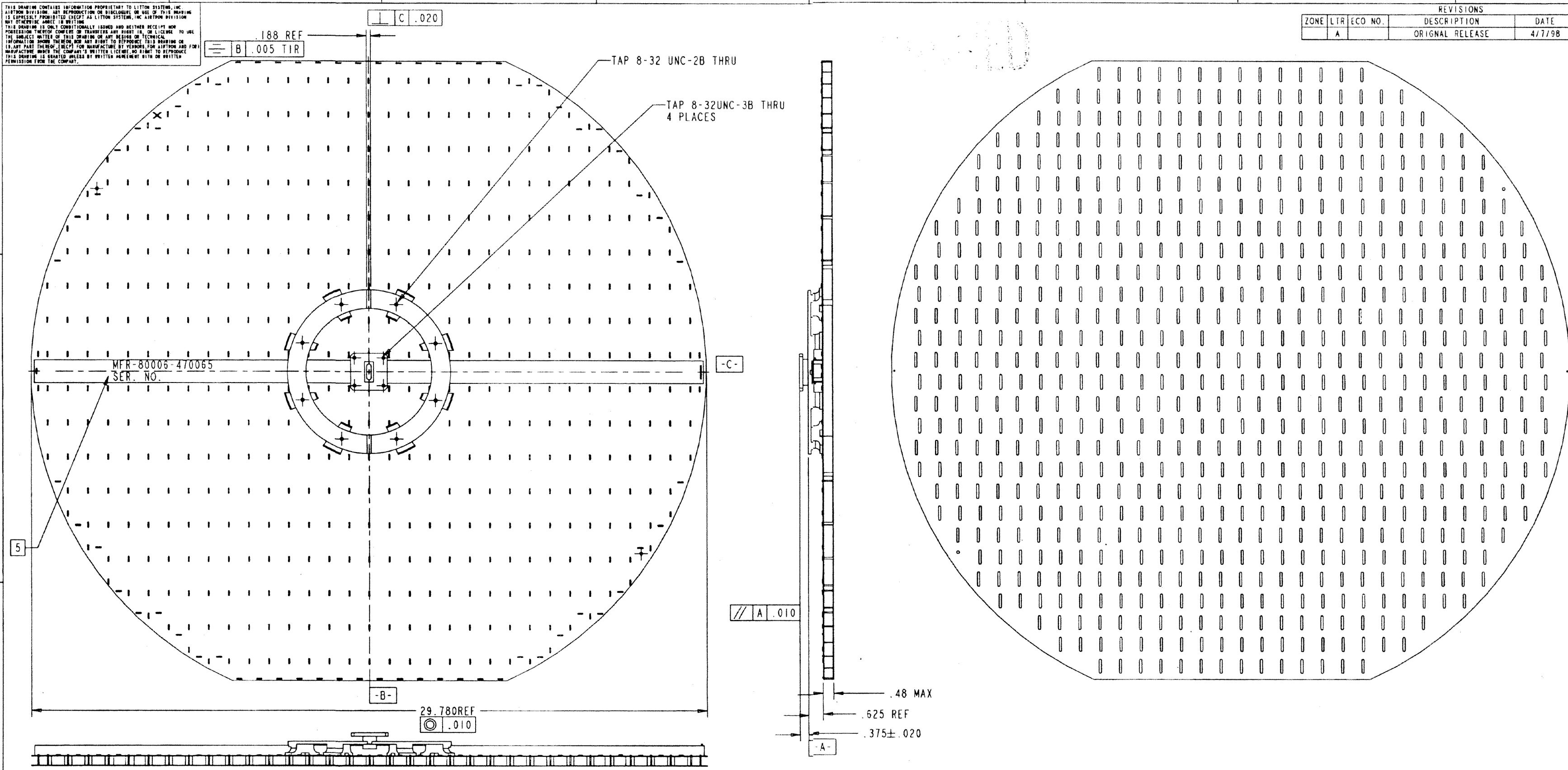
3 Milestone Payments

Payment to the Contractor shall be made according to the following milestones:

- 100% of payment upon delivery of hardware and documentation.

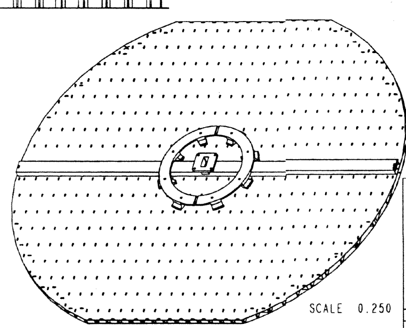
4 Statement of Work

1) The antenna size is 26 inches in diameter, and less than 2.25 inches in thickness.
2) The antenna center frequency is 9.61 GHz. This frequency maybe adjusted upon NASA's request based on frequency allocation permission.
3) The antenna frequency bandwidth is +/- 30 MHz.
4) The antenna beamwidth is 3.5 degree maximum, beam boresight perpendicular to the antenna face.
5) The antenna gain is 34 dB minimum.
6) The antenna sidelobes is -25 dB minimum.
7) The antenna polarization is linear.
8) The antenna cross-polarization is -25 dB minimum.
9) The antenna return loss is =< -14 dB over the bandwidth.
10) The antenna maximum peak power rating is 9 kW at flight altitude.
11) The antenna power rating maximum pulse width 3 microseconds, with a maximum pulse repetition rate of 6 KHz.
12) The antenna maximum flight altitude is 70,000 feet.
13) The antenna pressure sealed to 18 psi.
14) The antenna-mounting interface should follow reference drawing 470065.



NOTES

1. MATERIAL MOSTLY ALUM ALLOY
2. FINISH CHEMICAL FILM PER MIL-C-5541.CLASS IA.
3. CONTINUOUS FILLET REQUIRED WHERE REFERENCED THIS NOTE. VOIDS IN BRAZE FILLET ARE PERMISSIBLE AT TABS PROJETING THROUGH PARTION PROVIDED THAT VOID DOES NOT PASS LIGHT IN TO THE SPACE BETWEEN PLATE.
4. ELECTRICAL REQUIREMENTS;
   - A. FREQUENCY RANGE --- 9345±20 MHz
   - B. GAIN -------------- 35.0 DB MIN
   - C. BEAM WIDTH -------- VERTICAL -3db,3.3 12db,6.9°
     HORIZONTAL -3db,3.6 12db,7.9°
   - D. FIRST SIDELODE ---- 30db MIN DOWN FROM MAIN LOBE
   - E. INPUT VSWR -------- 1.5 MAX 1.3 NOMINAL AT ± 5 MHz
     1.8 MAX 1.3 NOMINAL AT ± 15 MHz
   - F. POWER HANDLING CAPABILTY
     1KW MAX @ 50,000 FT MAX
5. MARK IN .12 HIGH BLACK CHARACTERS PER MIL-STD-130.
6. FOR ASSEMBLY DETAILS SEE 461001
7. TEST PER TS-3047



SCALE 0.250

SCALE 0.450

ENVELOPE DRAWING

REVISIONS					
ZONE	LTR	ECO NO.	DESCRIPTION	DATE	APPROVED
	A		ORIGNAL RELEASE	4/7/98	BJG

QTY	ITEM	SIZE	PART NO.	DESCRIPTION
				LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

DRAWN BY B. GENARDI	4/7/98	UNLESS OTHER SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES
MANUFACTURING		
ENGINEER	4/7/98	MATERIAL; SEE NOTE
QUALITY C.		
CUSTOMER/NO.		
REF. NO. 460905		
APPROVED		UNLESS OTHERWISE SPECIFIED ALL MACHINED SURFACES 63 BREAK ALL INTERNAL AND EXTERNAL SHARP CORNERS .005 TO .015 RADIUS

Litton
Airtron

MORRIS PLAINS N.J.

ANTENNA ARRAY
29.78 DIA

SIZE	CODE IDENT NO.		REV
D	80006	470065	A
SCALE	WT	SHEET	